



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,800	07/22/2003	Yang-lim Choi	1293.1846	5299

21171 7590 01/12/2007
STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

SMITHERS, MATTHEW

ART UNIT	PAPER NUMBER
----------	--------------

2137

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/623,800

Applicant(s)

CHOI ET AL.

Examiner

Matthew B. Smithers

Art Unit

2137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-93 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-93 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :2/2/04;11/17/05;4/14/06;8/14/06.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed February 2, 2004, November 17, 2005, April 14, 2006 and August 14, 2006 has been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Objections

Claim 31 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. As presently written, claim 31 depends from claim 5 and recites the same limitation as provided in claim 5.

Claim 71 is objected to because of the following informalities: As presently written, claim 71 depends from itself. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 63-93 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 63-93 are computer readable storage medium claims that cause a computer to perform the method steps of claims 32-62. In

paragraph [0079] of applicant's specification the computer readable medium can be a carrier wave. Carrier waves lack the necessary physical articles to constitute a machine or a manufacture within the meaning of 101, they are not a combination of chemical compounds forming a composition of matter and they are not a series of steps or acts to a process. Therefore, carrier waves do not fall within one of the four statutory classes of an invention and as such claims 63-93 are deemed non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-93 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 768 774 granted to Ishiguro.

Regarding claim 1, Ishiguro meets the claimed limitations as follows:

“An apparatus to hierarchically encrypt media data, comprising:

an N-th layer key generator generating an N-th layer key;

an (N+1)-th layer key generator generating an (N+1)-th layer key by applying the N-th layer key to a predetermined function;

an N-th layer data encryptor encrypting N-th layer data using the N-th layer key;

and an (N+1)-th layer data encryptor encrypting (N+1)-th layer data using the (N+1)-th layer key.” see column 3, line 50 to column 4, line 1; column 5, line 8 to column 6, line 9 and Figures 2 and 3.

Regarding claim 2, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 1, wherein the predetermined function is a one-way function to deduce a value of the function from an input value but not to deduce the input value from the value of the function.” see column 3, line 50 to column 4, line 1 and Figure 2.

Regarding claim 3, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 1, wherein the N-th layer data is the entire media data except key clip data and key frame data, and the (N+1)-th layer data is the key clip data except the key frame data.” see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is the key clip data and K_{i-1} is the Nth layer data key) and Figures 2, 3 and 9.

Regarding claim 4, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 1, wherein the N-th layer data is key clip data of the media data except key frame data of the media data, and the (N+1)-th layer data is the key frame data of the media data.” see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Regarding claim 5, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 4, wherein the N-th layer key generator generates the N-th layer key by applying an (N-1)-th layer key to the predetermined function." see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Regarding claim 6, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising: an N-th layer key buffer temporarily storing the N-th layer key; an N-th layer key generation commander commanding the N-th layer key generator to generate the N-th layer key according to meta-data when the meta-data is received; and an N-th layer key supply commander commanding the N-th layer key buffer to supply the N-th layer key to the N-th layer data encryptor according to the meta data when the N-th layer data is received." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 7, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising: an (N+1)-th layer key buffer temporarily storing the (N+1)-th layer key; an (N+1)-th layer key generation commander commanding the (N+1)-th layer key generator to generate the (N+1)-th layer key according to meta-data when the meta-data is received; and an (N+1)-th layer key supply commander commanding the (N+1)-th layer key buffer to supply the (N+1)-th layer key to the (N+1)-th layer data encryptor according to the meta data when the

(N+1)-th layer data is received.” see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 8, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 1, further comprising: an N-th layer key encryptor encrypting the N-th layer key.” see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 9, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 8, further comprising: an encrypted N-th layer key transmitter transmitting the encrypted N-th layer key.” see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 10, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 8, further comprising: an encrypted N-th layer key storage block storing the encrypted N-th layer key; and an encrypted N-th layer key transmitter transmitting the encrypted N-th layer key stored in the encrypted N-th layer key storage block upon a request from a user.” see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 11, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 1, further comprising: an (N+1)-th layer key encryptor encrypting the (N+1)-th layer key.” see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 12, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 11, further comprising: an encrypted (N+1)-th layer key transmitter transmitting the encrypted (N+1)-th layer key." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 13, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 11, further comprising: an encrypted (N+1)-th layer key storage block storing the encrypted (N+1)-th layer key; and an encrypted (N+1)-th layer key transmitter transmitting the encrypted (N+1)-th layer key stored in the encrypted (N+1)-th layer key storage block upon a request from a user." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 14, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising: an encrypted N-th layer data transmitter transmitting the encrypted N-th layer data." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 15, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising: an encrypted N-th layer data storage block storing the encrypted N-th layer data; and an encrypted N-th layer data transmitter transmitting the encrypted N-th layer data stored in the encrypted N-th layer data storage block upon a request from a user." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 16, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising; an encrypted (N+1)-th layer data transmitter transmitting the encrypted (N+1)-th layer data." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 17, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 1, further comprising: an encrypted (N+1)-th layer data storage block storing the encrypted (N+1)-th layer data; and an encrypted (N+1)-th layer data transmitter transmitting the encrypted (N+1)-th layer data stored in the encrypted (N+1)-th layer data storage block upon a request from a user." see column 10, line 18 to column 13, line 17 and Figures 10, 11 and 12.

Regarding claim 18, Ishiguro meets the claimed limitations as follows:

"An apparatus to hierarchically decrypt media data, comprising: an N-th layer key generator generating an N-th layer key; an (N+1)-th layer key generator generating an (N+1)-th layer key by applying the N-th layer key to a predetermined function; an encrypted N-th layer data decryptor decrypting encrypted N-th layer data using the N-th layer key; and an encrypted (N+1)-th layer data decryptor decrypting encrypted (N+1)-th layer data using the (N+1)-th layer key." see column 7, line 2 to column 10, line 15 and Figures 6, 7, 8 and 9.

Regarding claim 19, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 18, wherein the predetermined function is a one-way function by which a value of the function is found from an input value but the input value is not found from the value of the function." see column 3, line 50 to column 4, line 1 and Figure 2.

Regarding claim 20, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 18, wherein the N-th layer data is the entire media data except key clip data and key frame data, and the (N+1)-th layer data is the key clip data except the key frame data." see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is the key clip data and K_{i-1} is the Nth layer data key) and Figures 2, 3 and 9.

Regarding claim 21, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 20, wherein the N-th layer key generator receives an N-th layer key and generates the N-th layer key." see column 7, line 2 to column 10, line 15 and Figures 2, 3, 6, 7, 8 and 9.

Regarding claim 22, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 20, wherein the N-th layer key generator comprises: an encrypted N-th layer key receiver receiving the encrypted N-th layer key; and an encrypted N-th layer key decryptor decrypting the encrypted N-th layer key to generate the N-th layer key." see column 7, line 2 to column 10, line 15 and Figures 6, 7, 8 and 9.

Regarding claim 23, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 18, wherein the N-th layer data is key clip data of the media data except key frame data of the media data, and the (N+1)-th layer data is the key frame data of the media data." see column 7, line 2 to column 10, line 15 and Figures 6, 7, 8 and 9.

Regarding claim 24, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 23, wherein the N-th layer key generator generates the N-th layer key by applying an (N-1)-th layer key to the predetermined function." see column 7, line 2 to column 10, line 15 and Figures 6, 7, 8 and 9.

Regarding claim 25, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 18, further comprising: an N-th layer key buffer temporarily storing the N-th layer key; an N-th layer key generation commander commanding the N-th layer key generator to generate the N-th layer key according to meta-data when the meta-data is received; and an N-th layer key supply commander commanding the N-th layer key buffer to supply the N-th layer key to the encrypted N-th layer data decryptor according to the meta data when the encrypted N-th layer data is received." see column 10, line 18 to column 13, line 17 and Figures 6, 7, 8, 9, 10, 11 and 12.

Regarding claim 26, Ishiguro meets the claimed limitations as follows:

"The apparatus of claim 18, further comprising: an (N+1)-th layer key buffer temporarily storing the (N+1)-th layer key; an (N+1)-th layer key generation commander commanding the (N+1)-th layer key generator to generate the (N+1)-th layer key according to meta-data when the meta-data is received; and an (N+1)-th layer key supply commander commanding the (N+1)-th layer key buffer to supply the (N+1)-th layer key to the encrypted (N+1)-th layer data decryptor according to the meta data when the encrypted (N+1)-th layer data is received." see column 10, line 18 to column 13, line 17 and Figures 6, 7, 8, 9, 10, 11 and 12.

Regarding claim 27, Ishiguro meets the claimed limitations as follows:

“An apparatus to hierarchically encrypt and decrypt media data, comprising: a hierarchical encryption unit generating an N-th layer key, generating an (N+1)-th layer key by applying the generated N-th layer key to a predetermined function, encrypting N-th layer data using the N-th layer key, and encrypting (N+1)-th layer data using the generated (N+1)-th layer key; and a hierarchical decryption unit generating the N-th layer key, generating the (N+1)-th layer key by applying the N-th layer key to the predetermined function, decrypting the encrypted N-th layer data using the N-th layer key, and decrypting the encrypted (N+1)-th layer data using the (N+1)-th layer key.” see column 3, line 50 to column 4, line 1; column 5, line 8 to column 6, line 9; column 7, line 2 to column 10, line 15 and Figures 2, 3, 6, 7, 8 and 9.

Regarding claim 28, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 27, wherein the predetermined function is a one-way function by which a value of the function is found from an input value but the input value is not found from the value of the function.” see column 3, line 50 to column 4, line 1 and Figure 2.

Regarding claim 29, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 27, wherein the N-th layer data is the entire media data except key clip data and key frame data, and the (N+1)-th layer data is the key clip data except the key frame data.” see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is the key clip data and K_{i-1} is the Nth layer data key) and Figures 2, 3 and 9.

Regarding claim 30, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 27, wherein the N-th layer data is key clip data of the media data except key frame data of the media data, and the (N+1)-th layer data is the key frame data of the media data.” see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Regarding claim 31, Ishiguro meets the claimed limitations as follows:

“The apparatus of claim 5, wherein the N-th layer key generator generates the N-th layer key by applying an (N-1)-th layer key to the predetermined function.” see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Claims 32-48 are method claims that are substantially equivalent to apparatus claims 1-17. Therefore, claims 32-48 are rejected by a similar rationale.

Claims 49-57 are method claims that are substantially equivalent to apparatus claims 18-26. Therefore, claims 49-57 are rejected by a similar rationale.

Claims 58-61 are method claims that are substantially equivalent to apparatus claims 27-30. Therefore, claims 58-61 are rejected by a similar rationale.

Regarding claim 62, Ishiguro meets the claimed limitations as follows:

"The method of claim 61, further comprising: generating the N-th layer key by applying an (N-1)-th layer key to the predetermined function." see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Claims 63-79 are claims to a computer readable storage medium that are substantially equivalent to method claims 32-48. Therefore, claims 63-79 are rejected by a similar rationale.

Claims 80-88 are claims to a computer readable storage medium that are substantially equivalent to method claims 49-57. Therefore, claims 80-88 are rejected by a similar rationale.

Claims 89-92 are claims to a computer readable storage medium that are substantially equivalent to method claims 58-61. Therefore, claims 89-92 are rejected by a similar rationale.

Regarding claim 93, Ishiguro meets the claimed limitations as follows:

"The computer readable storage medium of claim 92, further comprising: generating the N-th layer key by applying an (N-1)-th layer key to the predetermined function." see column 6, lines 10-26 (the work key encrypts the plain text data shown in lines 10-15 of column 6); column 9, lines 3-56 (where K_i is now the key frame data; K_{i-1} is the key clip

data key and K_{i-2} corresponds to the work key used to encrypt the media data) and Figures 2, 3 and 9.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Granuke et al. (US 20030002668) discloses a digital rights management system using a hierarchical protection scheme.

B. Ueda et al. (US 7,155,011) discloses a method for encrypting blocks of data using a hierarchy of encryption keys.

C. Ohtsuka (US 6,456,985) discloses a method for encrypting images where the image is decomposed into a plurality of components creating levels of hierarchy that are subsequently encrypted.

D. Enokida (US 6,473,859) discloses a method for encrypting a plurality of hierarchical coded data generated from coding an original image and decoding the hierarchical data under predetermined conditions.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew B. Smithers whose telephone number is (571) 272-3876. The examiner can normally be reached on Monday-Friday (8:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel L. Moise can be reached on (571) 272-3865. The fax phone

Art Unit: 2137

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Matthew B Smithers
Primary Examiner
Art Unit 2137